Isocyanic acid, m-phenylenediiso-propylidene - Environmental Defense Comments

(Submitted via Internet 2/7/03)

Environmental Defense appreciates this opportunity to submit comments on the robust summary/test plan for Isocyanic Acid, m-phenylenediiso-propylidene (TMXDI).

The test plan and robust summary for TMXDI (CAS# 2778-42-9) was prepared by Cytec Industries Inc. According to the sponsor, TMXDI is manufactured in a closed system and it is not sold directly to the consumer market. It is apparently used primarily in reactions to create polymers. It is unclear from the submission whether the sponsor is the only manufacturer of TMXDI, and whether the manufacturing and use conditions it describes apply to all manufacturers and users of the chemical.

The sponsor claims that residual levels are low in finished consumer products and the potential for human exposure is therefore limited. However, no quantitative information is given on residual levels of TMXDI in any product so we do not have adequate data to evaluate the credibility of this claim.

Diisocyanates are well known sensitizing agents and they possess a high level of acute toxicity, thereby raising concerns about risks during the synthesis, transport and use of TMXDI. Cytec briefly summarizes its worker safety programs and Emergency Response Plans and they seem in order, although the lack of details presented in the test plan precludes our full evaluation of those issues. Nevertheless, it is clear that accidental releases of TMXDI could pose a serious public health threat.

TMXDI is highly toxic when administered to experimental animals via inhalation with an LD 50 of 0.27 ppm in Sprague-Dawley rats. It is much less toxic when administered orally. The main site of toxic action appears to be the lungs where a broad array of lesions are found following inhalation exposures.

The test plan proposes additional studies for developmental toxicity and chromosomal aberrations as no data exist for those endpoints. We agree with the proposal to conduct those studies.

There are two seemingly adequate repeat dose studies for TMXDI following inhalation exposures for 28 or 90 days, but we do have a concern regarding the description of those studies in the robust summaries. The inhalation LD 50 is reported to be 0.27 ppm in rats, yet the doses used in the repeat dose studies in the same strain of rats were 0.4, 0.8 and 1.6 ppm; all of these doses were well above the reported LD 50, yet only a few animals died during the chronic exposure period. This suggests that there may have been a purity problem or some other significant flaw with the repeat dose and/or acute studies which could preclude their use as screening level assessment data. This concern needs to be addressed by the sponsor before we can concur that existing repeat dose and reproductive studies are adequate to fulfill HPV requirements.

Thank you for this opportunity to comment.

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